services combining medical and psychiatric expertise is needed.

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Passive smoking and otitis media with effusion

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Otitis media with effusion is reported to occur in over 80% of children at some stage, but surgery is indicated only when the condition is unresolved after three months. The main underlying causes of otitis media with effusion are eustachian tube malfunction, alteration of the mucociliary system, and nasopharyngeal disproportion. A family history of otitis media in parents or siblings and parental occupation and smoking may also be risk factors.[1] Hinton[2] found a higher proportion of parents who smoked among 115 children undergoing surgery for otitis media with effusion than among 35 children attending an orthoptic clinic. A study of 892 7 year old schoolchildren in Edinburgh found an association between salivary cotinine concentrations from passive smoking and the presence of tympanometric abnormalities.[3] Such abnormalities, however, are not necessarily associated with otitis media with effusion.

Otitis media with effusion is diagnosed from the history and by otoscopy, audiometry, and tympanometry. No single entity is completely specific or sensitive and the condition is confirmed by myringotomy. We evaluated the relation between parental smoking habit and the presence of the established condition in a case-control study.

Subjects, methods, and results

In all, 115 children (70 boys, 45 girls; age range 17 months to 11 years 6 months, median 5 years 5 months) from the Cheltenham and Gloucester areas who had otitis media with effusion confirmed by myringotomy were matched according to age (within six months), sex, race, and social class to a control group of healthy children attending the ophthalmology and orthopaedic clinics. The children with otitis media with effusion had had hearing loss for at least three months and had been assessed by otoscopy, tympanometry, and audiometry. The control group had no history of ear problems and normal results on otoscopy and tympanometry with a portable Welch Allyn tympanometer.

The smoking habits of the parents of the children in the two groups were recorded after we had explained the aims of our study to them. Data were compared by McNemar's test for the presence of at least one adult in the household who smoked and whether the mother smoked. The differences between the number of cigarettes smoked by mothers and by all of the adults in the household were calculated by comparing the median values of paired data by the binomial method.

There were 230 adults in the study group and 228 adults in the control group. Seven patients were from socioeconomic class I, 14 from class II, 38 from class III, 43 from class IV, and 13 from class V. Parental smoking habits in the two groups were the same. There were no differences between the median number of cigarettes smoked in the two groups by mothers alone and by all adults in the household (95% confidence interval 0 to 0 cigarettes for both sets of data). The 95% confidence interval of the difference in proportion of mothers who smoked was −0·08 to 0·16 and that for all adults in the household −0·19 to 0·05 (McNemar's test; table).

Parental smoking habits among 115 matched pairs of otitis media with effusion children and children with otitis media with effusion

Group	Smokers present	Mother smokes	At least one adult in household smokes
Otitis media	No		
Control	No		
Otitis media	No		
Control	Yes		
Otitis media	Yes		
Control	No		
Otitis media	Yes		
Control	Yes		
Total			

Comment

Nasal symptoms, particularly those related to adenoid hypertrophy, are associated with the development of otitis media with effusion. Histamine concentrations in adenoid tissue are proportional to size, but ultrastructural evidence shows that the morphology of adenoid mast cells is the same in children with and without otitis media with effusion (A B Drake Lee, unpublished data). Exposure to cigarette smoke might induce instability of the mast cell walls and the onset of otitis media with effusion, but our data do not support this hypothesis.

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The prevalence of otitis media with effusion is highest where social conditions are poor,[1] and children of non-manual workers have significantly better hearing than do those of manual workers.[2] Cigarette smoking is commoner in those from the poorer socioeconomic classes but it is unlikely to be a risk factor for otitis media effusion, although it may have an association.

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Menarche and reproduction after treatment for African Burkitt's lymphoma

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African Burkitt's lymphoma is a rapidly progressing cancer that responds quickly to cyclophosphamide. Since 1966 the Burkitt's Tumor Project in Accra has treated children with Burkitt's lymphoma chiefly by cyclophosphamide. A troublesome side effect after cyclophosphamide, however, is sterility. We sought to determine how chemotherapy might influence fertility in adults who had been treated for Burkitt's lymphoma as children.

Patients, methods, and results

Between 1984 and 1988 we attempted to interview and draw blood from every person treated at the University of Ghana Medical School for Burkitt's lymphoma between 1966 and 1988 who was at least 16 in 1988 and had survived at least five years from date of diagnosis. Because of difficulty in tracing boys results are given for girls only. Survivors were diagnosed at an average age of 9 years (range 3-17). All except three were prepubertal at diagnosis. All children were treated with cyclophosphamide and some also with other drugs. Cyclophosphamide was given fortnightly in boluses of 1400 mg/m² intravenously until remission, which was usually after three doses. The total dose ranged from 2·8 g/m² in two patients to roughly 9·0 g/m² in five (90-300 mg/kg).

Blood was sampled at the time of interview and date of the last menstrual period noted. Serum follicle stimulating hormone and luteinising hormone concentrations were measured by double antibody radioimmunoassay using the second international reference preparation as standard.

Most former patients lived in small rural villages with no access to postal or telephone systems. After excluding male patients and those who could not be located we interviewed 24 female survivors (two by proxy) and 13 sisters or neighbours as controls.

At follow up no survivor was still having treatment. All but two of the women were in good general health. One was blind and another had a chronic foot ulcer due to sensory deficit accompanying paraplegia. Both problems resulted from the tumour.

Survivors were similar to controls in age at interview, years of schooling, and sexual and marital experiences (table). Survivors, however, reached menarche significantly later than controls (age 13·5 *v* 12·2 years; $p<0·05$). This could not be attributed to treatment during puberty as the average age at menarche among the 16 survivors treated before age 11 was 13·3 years.

Of the 22 women trying for children, 21 had had at least one pregnancy. One woman who was treated for three weeks at age 11, reached the menarche at 16, and was 24 at follow up reported irregular periods and infertility for seven years. Sixteen of 17 married survivors had at least one child. Blood from 13 women was tested for follicle stimulating hormone and luteinising hormone concentrations. In none of these women were values abnormal.

Reproductive experiences of female survivors of African Burkitt's lymphoma and controls

	Survivors	Controls
Total No studied	24	13
No (%) with menstrual problems	1 (4)	0
No (%) ever had sexual intercourse	23 (96)	12 (92)
No (%) married	17 (71)	12 (92)
No (%) married with children	16/17 (94)	12/12 (100)
Average age at first live birth (years)	18·6	19·5
Average age at menarche (years)	13·5	12·2*
Average age at marriage (years)	18·4	20·6

*$p<0·05$ *t* test

Comment

In this small study most female survivors of Burkitt's lymphoma seemed to be fertile. The single potential problem noted was the delay in menarche by more than one year. So far as we know this is the first such report after treatment with cyclophosphamide, which previously has been associated with dose dependent gonadal dysfunction.[1] The doses received in our study were just below that range.[2] To date the longest follow up of girls treated with cyclophosphamide for the nephrotic syndrome indicated normal fertility in 16 of 18 women in their mid-20s, but age at menarche was not studied.[3]

Follow up studies of survivors of cancer treated with various agents found changes in timing of menarche, some recording an earlier age at menarche, others a later age. Reasons for this effect are unclear. We also do not know what implication this would have for the timing of menopause.

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